

- Shimer, H.** 1866. Coccus vs. Aphis. Preliminary notice of a new plant-louse genus. The Prairie Farmer 34(n.s.18): 290.
- . 1866. "Grape leaf louse"—*Daktulosphaira vitifoliae*. The Prairie Farmer 34 (n.s. 18): 365.
- . 1866. The grape leaf gall-coccus. (*Pemphigus vitifoliae* Fitch.). The Practical Entomologist 2(2): 17–19.
- . 1867. On a new genus in Homoptera, —(Section Monomera.). Proc. Acad. Sci. Philadelphia [19]: 2–11.
- . 1869. A summers study of hickory galls, with descriptions of supposed new insects bred therefrom. Trans. American Entomol. Soc. 2(1868–1869): 386–398.
- . 1871. Dr. Shimer's appeal. In The grape-leaf gall-louse-Phylloxera vitifoliae, Fitch. (Homoptera, Aphidae) by C. V. Riley. Third Ann. Rpt. on the noxious, beneficial and other insects of the State of Missouri. Pp. 93–94.
- Signoret, V.** 1869. Phylloxera vastatrix, Hémiptère-Homoptère de la famille des aphidiens, cause prétendue de la vigne. Ann. Soc. Entomol. France 9(ser. 4): 549–596.
- Steyskal, G. C.** 1974. Personal communication.
- Thomas, C.** 1879. Noxious and beneficial insects of the State of Illinois. Eighth Rpt. of the State Entomologist (Third Ann. Rpt.) Pp. 1–212 + I–X.
- Walsh, B. D.** 1863. On the genera of the Aphidae found in the United States. Proc. Entomol. Soc. Philadelphia 1(1862): 294–311.
- . 1866. Answers to correspondents. The Practical Entomologist 1(11): 111–112.
- . 1866. Notes by Benj. D. Walsh. In The grape leaf gall-coccus. (*Pemphigus vitifoliae* Fitch.) by H. Shimer. The Practical Entomologist 2(2): 19–20.
- . 1867. On the insects, coleopterous, hymenopterous and dipterous, inhabiting the galls of certain species of willow. Proc. Entomol. Soc. Philadelphia 6: 223–288.
- . 1867. First annual report on the noxious insects of the State of Illinois. Pp. 13–32.
- Walsh, B. D., and C. V. Riley.** 1869. Grape-vine leaf-gall. The American Entomol. 1(12): 248.
- Westwood, I. O.** 1869. New vine diseases. The Gardners' Chronicle. P. 109.
- Wilson, H. F.** 1910. A list of the genera described as new from 1758 to 1909 in the family Aphididae. Entomol. News 21: 147–156.

Synonymical Notes on Larrinae and Astatinae (Hymenoptera: Sphecidae)

Wojciech Pulawski

Zoological Institute, Wroclaw, Poland

ABSTRACT

The following new synonyms, new combinations, and new names are indicated: *Tachysphex projectus* Nurse, 1905, and *Tachysphex rufoniger* Bingham, 1897 = *Tachysphex pompiliformis* (Panzer), 1805; *Tachysphex mysticus* Pulawski, 1971 = *Tachysphex excelsus* Turner, 1917; *Tachysphex latissimus* Turner, 1917, and *Tachysphex pectoralis* Pulawski, 1964 = *Tachysphex erythrophorus* Dalla Torre, 1897; *Tachysphex laniger* Pulawski, 1964 = *Tachysphex gujaraticus* Nurse, 1909; *Tachysphex japonicus* Iwata, 1933 = *Tachysphex nigricolor* (Dalla Torre, 1897); *Tachysphex varihirtus* Cameron, 1903, *Tachysphex rugidorsatus* Turner, 1915, and *Tachysphex mindorensis* Williams, 1928 = *Tachysphex puncticeps* Cameron, 1903; *Tachysphex spinosus* Pulawski, 1974, nec Fox, 1893 = *Tachysphex spinulosus* Pulawski, new name; *Tachysphex brevitarsis* Kohl, 1901 = *Tachysphex bengalensis* Cameron, 1889; *Tachytes sericops* Smith, 1856, *Tachysphex depressus* (Saussure), 1867, and *Tachysphex helmsi* (Cameron), 1888 = *Tachysphex nigerrimus* (Smith), 1856; *Tachysphex lilliputianus* Turner, 1917 = *Tachysphex minutus* Nurse, 1909; *Tachysphex imperfectus* de Beaumont, 1940 = *Tachysphex fulvicornis* Turner, 1918; *Tachytes ceylonicus* Cameron, 1900, and *Tachytes aurifrons* Cameron, 1900, nec Lucas, 1849 = *Tachysphex panzeri* (vander Linden), 1829; *Tachysphex ablatu*s Nurse, 1909 = *Tachysphex panzeri pulverosus* (Radoszkowski), 1886; *Tachysphex foucauldi* de Beaumont, 1952 = *Tachysphex vulneratus foucauldi* de Beaumont; *Tachysphex heliophilus* Nurse, 1909 = *Tachysphex schmiedeknechti* Kohl, 1883; *Tachysphex strigatus* Turner, 1917 = *Tachysphex subfuscatus* Turner, 1917; *Tachysphex inventus* Nurse, 1903 = *Tachysphex erythropus*

(Spinola), 1838; *Tachysphex actaeon* de Beaumont, 1960 = *Tachysphex selectus* Nurse, 1909; *Tachysphex fluctuatus* (Gerstaecker), 1857 = *Tachysphex sericeus* (Smith), 1856; *Tachysphex pollux* Nurse, 1903 = *Holotachysphex hognathus* (Morice), 1897; *Prosopigastra acanthophora* Gussakovskij, 1933 = *Prosopigastra creon* (Nurse), 1903; *Homogambrus cemicivorus* Ferton, 1912 = *Prosopigastra creon cemicivora* (Ferton); *Prosopigastra carinata* Arnold, 1922 = *Prosopigastra creon carinata* Arnold; *Tachysphex nudus* Nurse, 1903 = *Prosopigastra nuda* (Nurse); *Parapiagetia integra* (Kohl), 1892 = *Parapiagetia genicularis* (F. Morawitz), 1890; *Tachysphex substriatulus* Turner, 1917 = *Parapiagetia substriatula* (Turner); *Parapiagetia denticulata* (Morice), 1897, and *Parapiagetia saharica* de Beaumont, 1956 = *Parapiagetia erythropoda* (Cameron), 1889; *Larrada obliqua* Smith, 1856 = *Larropsis (Ancistromma) obliqua* (Smith); *Tachytes serapis* Pulawski, 1962 = *Tachytes fucatus* Arnold, 1951; *Tachytes maculitarsis* Cameron, 1900 = *Tachytes brevipennis* Cameron, 1900; *Tachytes griseolus* Arnold, 1951, and *Tachytes rufitibialis* Arnold, 1951 = *Tachytes diversicornis* Turner, 1918; *Tachytes pulchricornis kolaensis* Turner, 1917 = *Tachytes pulchricornis* Turner, 1917; *Tachytes patrizii* Guiglia, 1932 = *Tachytes comberi* Turner, 1917; *Tachytes andreniformis* Cameron, 1902, nec Cameron, 1889, and *Tachytes fulvovestitus* Cameron, 1904 = *Tachytes fulvopilosus* Cameron, 1904; *Tachytes proximus* Nurse, 1903 = *Tachytes tabroanae* Cameron, 1900; *Tachytes maculipennis* Cameron, 1904 = *Tachytes modestus* Smith, 1856; *Tachytes shiva* Nurse, 1903, *Tachytes varipilosus* Cameron, 1905, and *Tachytes formosanus* Tsuneki, 1966 = *Tachytes saundersii* Bingham, 1897; *Tachytes suluensis* Williams, 1928 = *Tachytes saundersii suluensis* Williams; *Tachytes guichardi* Arnold, 1951 = *Tachytes basilicus* Guérin-Méneville, 1844; *Tachytes neavei* Turner, 1917 = *Tachytes velox* Smith, 1856; *Tachytes melanopygus* Costa, 1893 = *Tachytes argyreus* (Smith), 1856; *Tachytes basalis* Cameron, 1889, *Tachytes calvus* Turner, 1929, and *Tachytes seminudus* Arnold, 1951 = *Tachytes pygmaeus* Kohl, 1888; *Gastrosericus binghami* Cameron, 1897 = *Gastrosericus rothneyi* Cameron, 1889; *Liris nitidus* Cameron, 1913 = *Liris aurifrons* (Smith), 1859; *Notogonia pseudoliris* Turner, 1913 = *Liris croesus* (Smith), 1856; *Notogonia chapmani* Cameron, 1900 = *Liris jaculator* (Smith), 1856; *Notogonia pulchripennis* Cameron, 1889, and *Notogonia luteipennis* Cameron, 1890 = *Liris conspicua* (Smith), 1856; *Astata argenteofascialis* Cameron, 1889 = *Lyroda argenteofascialis* (Cameron); *Odontolarra rufiventris* Cameron, 1900 = *Lyroda formosa* (Smith), 1859; *Astata agilis* Smith, 1875 = *Astata boops* (Schränk), 1781; *Astata chilensis* Saussure, 1854 = *Astata australasiae* Shuckard, 1837; *Astata stecki* de Beaumont, 1942 = *Astata kashmirensis* Nurse, 1909; *Astata absoluta* Nurse, 1909 = *Astata compta* Nurse, 1909; *Astata fletcheri* Turner, 1917, and *Astata hirsutula* Gussakovskij, 1933 = *Astata quettae* Nurse, 1903; *Astata eremita* Pulawski, 1959 = *Astata lubricata* Nurse, 1903; *Astata interstitialis* Cameron, 1907 = *Astata (Dryudella) orientalis* Smith, 1856. A number of lectotypes are designated for the first time.

During the last few years I have had several opportunities to examine types of Sphecidae preserved in various European institutions, and my recent stay in the British Museum (Natural History) was dedicated mainly to studying types. As a result, numerous new synonyms and new combinations have been found, and they are discussed below.

There are several reasons why a species may be described 2 or more times as new: inaccurate diagnoses of previous writers, insufficient knowledge of taxonomically important characters, absence of good diagnostic features, sexual dimorphism, scarcity of material, etc. A usually unappreciated factor is the occurrence of many species in 2 or 3 zoo-

geographic regions; in such cases they often receive a different name in each region. Indeed, authors dealing with the Palaearctic, Ethiopian and Oriental Larinae and Astatinae (including myself), usually have concentrated on the fauna of 1 region and ignored species inhabiting other territories. The number of synonyms resulting from such limited surveys is considerable, and several examples are found below.

I take this opportunity to express my heartiest thanks to the staff of the Hymenoptera Section of the British Museum (Natural History), and especially to Dr. M. Day and Mr. C. R. Vardy for their hospitality and kind assistance. The help of Dr. Z. Bouček of the Com-

monwealth Institute of Entomology is particularly appreciated. I sincerely thank Mr. E. Taylor and Mr. Ch. O'Toole for their help during my short visits in the Oxford University Museum. I am much indebted to Dr. A. S. Menke (Systematic Entomology Laboratory, USDA, Washington, D. C.) for his critical remarks and help with English.

In the following text, an exclamation mark before the name of a species indicates that the holotype or syntypes have been examined.

Tachysphex pompiliformis (Panzer)

- ! *Larra pompiliformis* Panzer, 1805: pl. 13, ♀. Holotype ♀: Germany (Zool. Samml. Munich).
! *Tachysphex projectus* Nurse, 1903b: 517, ♀. Holotype ♀: Kashmir, 5000–6000 ft. (British Mus., Type Hym. 21.244). **Syn. n.**
! *Tachysphex rufo-niger* Bingham, 1897: 195, ♀. Lectotype ♀: "North-West Provinces [of India],"? or Pakistan (British Mus., Type Hym. 21.247), present designation. **Syn. n.**

The types of *T. projectus* and *T. rufoniger* are identical with the common *T. pompiliformis*.

Tachysphex excelsus Turner

- ! *Tachysphex excelsus* Turner, 1917a: 320, ♀. Lectotype ♀: China: Tibet: Gyantse, 13000 ft. (British Mus., Type Hym. 21.266). **Present designation.**
! *Tachysphex mysticus* Pulawski, 1971: 81, ♀, ♂. Holotype ♀: Mongolia: Ulan-Bator (Zool. Inst. Leningrad). **Syn. n.**

The 3 syntype females of *T. excelsus* possess the diagnostic characters of *T. mysticus*: peculiar clypeus (highest point of middle clypeal lobe near clypeal hind-margin); vertex hair erect; gastral terga without silvery, apical fasciae; terga I–III with sparse, microscopic punctures; underside of forefemora with fine, dense, punctures, and with large, sparse, punctures; outer face of foretibiae with glabrous zone. The disk of the mesoscutum is sparsely punctate (punctures several diameters apart).

Tachysphex erythrophorus Dalla Torre

- ! *Tachysphex erythrogaster* Cameron, 1889: 143, ♀. Holotype ♀: India: Bombay State: Poona

(Oxford Univ. Mus., coll. Rothney). *Nec Tachysphex erythrogaster* (Costa), 1882.
Tachysphex erythrophorus Dalla Torre, 1897: 679 (new name for *T. erythrogaster* Cameron, nec Costa).

! *Tachysphex latissimus* Turner, 1917d: 199, ♀, ♂. Lectotype ♀: India: Bihar: Pusa (British Mus., Type Hym. 21.254). **Present designation; syn. n.**

! *Tachysphex pectoralis* Pulawski, 1964: 101, ♀, ♂. Holotype ♀: Egypt: Abu Rawash NW of Cairo (coll. Pulawski). **Syn. n.**

The types of *T. erythrogaster* Cameron and *T. latissimus* agree with *T. pectoralis*, as characterized by me (Pulawski, 1971). Diagnostic characters are: vestiture long, woolly, completely obscuring integument of mesopleura and forecorners of mesoscutum; anterior (oblique) part of mesosternum with short, suberect hair; legs and usually gaster red; flagellomere I long. The holotype of *T. erythrogaster* Cameron bears a label "*Larra erythrogaster* Cameron." The lip of its clypeus is distinctly emarginate mesally. Unlike all other specimens seen, gastral terga II–V are black (except for colourless apical depressions) in the lectotype of *T. latissimus*.

Tachysphex gujaraticus Nurse

- ! *Tachysphex gujaraticus* Nurse, 1909: 516, ♀, ♂. Lectotype ♀: India: Bombay State: Deesa, 140 km NNE of Ahmadabad (British Mus., Type Hym. 21.247). **Present designation.**
! *Tachysphex laniger* Pulawski, 1964: 105, ♀, ♂. Holotype ♀: Egypt: Abu Rawash NW of Cairo (coll. Pulawski). **Syn. n.**

The types of *T. gujaraticus* and *T. laniger* are identical. Diagnostic characters of *T. gujaraticus* are: vestiture long, woolly, almost totally hiding sculpture of mesopleura and forecorners of mesoscutum; gaster and legs red in female and usually in male; lip of female clypeus denticulate.

Tachysphex nigricolor (Dalla Torre), **comb. n.**

- ! *Larrada nigricans* Smith, 1873: 192 (sex not mentioned). Lectotype ♀: Japan: Nagasaki (British Mus., Type Hym. 21.256). **Present designation. Nec Walker, 1871.**
Larra nigricolor Dalla Torre, 1897: 670 (new name for *Larrada nigricans* Smith, nec Walker).

Tachysphex japonicus Iwata, 1933: 47, ♀, ♂. Holotype ♀: Japan: Honshu: Ikeda, Settsu (Kyoto Univ. or Tokyo Mus.). Syn. n.

Tsunekei (1964a) synonymized *Larra nigricans* Smith with *Liris japonica* Kohl, but the lectotype female of the former species is actually identical with *T. japonicus* Iwata (the only representative of the genus in Japan). For the characteristics of this species see Pulawski (1971) and Tsunekei (1971).

Tachysphex puncticeps Cameron

! *Tachysphex puncticeps* Cameron, 1903: 127, ♀. Holotype ♀: India: Bengal: Barrackpore, 20 km N of Calcutta (Oxford Univ. Mus., coll. Rothney).

! *Tachysphex varihirta* Cameron, 1903: 128, ♂. Holotype ♂: India: Bengal: Barrackpore (Oxford Univ. Mus., coll. Rothney). Syn. n.

! *Tachysphex rugidorsatus* Turner, 1915: 556, ♀. Lectotype ♀: Tasmania: Eaglehawk Neck (British Mus., Type Hym. 21.216). Present designation; syn. n.

! *Tachysphex mindorensis* Williams, 1928: 92, ♂, ♀. Holotype ♂: Philippines: Mindoro Is.: San Jose (Bishop Mus. Honolulu). Syn. n.

This species belongs to the *pompiliformis* group and is rather similar to *T. nitidus* Spinola. It may be easily recognized by the mesoscutal hair which is shorter than the midocellus diameter.

Tachysphex spinulosus, nom. n.

! *Tachysphex spinosus* Pulawski, 1974: 72, ♀. Holotype ♀: Brazil: Mato Grosso: Xavantina (British Mus.). Nec W. Fox, 1893.

Tachysphex bengalensis Cameron

! *Tachysphex bengalensis* Cameron, 1889: 154, ♀. Lectotype ♀: India: "Bengal: Tirhoot" = Bihar: Muzalfarpur (Oxford Univ. Mus., coll. Rothney). Present designation.

! *Tachysphex brevitaris* Kohl, 1901: 783, ♀. Syn-types: Ceylon: Badurelia (Nathist. Mus. Vienna). Syn. n.

T. bengalensis is probably a roach collector because tarsomeres IV of the female are obtusely emarginate and wider than long, a trait common to such wasps. It differs from other Indian *Tachysphex* by the long, woolly hair on the head and thorax, strongly punctate mesopleura, ridged propodeal sides, and black body.

The species called *T. bengalensis* by

Williams (1928) is actually *T. tinctipennis* Cameron (holotype seen). It is very different from true *T. bengalensis* but is rather similar to *T. nigricolor*.

Tachysphex nigerrimus (Smith)

! *Tachytes nigerrimus* Smith, 1856: 302, ♀ (reference to White's MS name *Larra nigerrima*). Holotype ♀: New Zealand (British Mus., Type Hym. 21.213). White in Butler, 1874: pl. 7 (*Astata*); Turner, 1908: 491 (*Tachysphex*).

! *Tachytes sericops* Smith, 1856: 302, "♀" = ♂. Holotype ♂: New Zealand (British Mus., Type Hym. 21.212). Syn. n.

! *Tachytes depressus* Saussure, 1867: 69, ♀. Holotype ♀: New Zealand (Nathist. Mus. Vienna). Syn. n. Kohl, 1885: 401 (*Tachysphex*).

Tachytes Helmsii Cameron, 1888: 182, ♀. Type(s): New Zealand: Greymouth (location unknown). Syn. n. Kirkaldy, 1910: 131 (*Tachysphex*).

The types of *T. nigerrimus* and *T. sericops* are the opposite sexes of one species. I was unable to locate the type of *T. helmsii*, but this species is certainly a synonym of *T. nigerrimus*. In the original description, Cameron says "this species belongs to the genus *Tachysphex* (Kohl)," and the only *Tachysphex* occurring in New Zealand is *T. nigerrimus*. A female specimen in the British Museum bears a label in Cameron's handwriting "*Tachytes Helmsi* Cam. N. Zealand," and it is *T. nigerrimus*; obviously this is the specimen mentioned by Cameron (1898).

Diagnostic characters of this species are: female mandibles without lobe midway on lower margin; female clypeus almost flat, with middle lobe slightly raised along mid line; male hindtibiae fusiform, narrow basally, male foretarsi with rake.

Tachysphex minutus Nurse

! *Tachysphex minutus* Nurse, 1909: 516, ♀, ♂. Lectotype ♂: India: Bombay State: Deesa (British Mus., Type Hym. 21.258a). Present designation.

! *Tachysphex lilliputianus* Turner, 1917d: 198, ♂. Holotype ♂: India: Bihar: Pusa (British Mus., Type Hym. 21.254). Syn. n.

This species belongs to the *brevipennis* group and is very similar to *T. rugosus* Guss. and *T. quadrifurci* Pul. It differs from the former by the longer

foretarsal rake in the male and from the latter by the female gena, which is thick as seen from above. Possibly these differences represent geographic variation.

***Tachysphex fulvicornis* Turner**

! *Tachysphex fulvicornis* Turner, 1918b: 363, ♀. Holotype ♀: India: Bengal: Chapra (British Mus., Type Hym. 21.259).

Tachysphex imperfectus de Beaumont, 1940: 178, ♀. Holotype ♀ (de Beaumont, 1947a: 210): Algeria: Biskra (Oxford Univ. Mus.). Syn. n.

The holotype of *T. fulvicornis* is identical with North African specimens of *T. imperfectus* in all taxonomically important characters, such as rugose frons, very densely punctate gastral terga, basal flagellomeres ferrugineous, etc., but it differs from other females in having a tectiform pygidial area, a rather unimportant character.

***Tachysphex panzeri* (vander Linden)**

! *Tachytes panzeri* vander Linden, 1829: 22, ♂, ♀ (♀ = *Tachysphex pseudopanzeri* de Beaumont). Type: Spain (lost). Neotype ♂ (Pulawski, 1971: 262): Spain: Toledo (Rijksmus. Nat. Hist. Leiden). Kohl, 1884: 368 (*Tachysphex*).

! *Tachytes ceylonica* Cameron, 1900a: 21, ♂. Holotype ♂: Ceylon (Oxford Univ. Mus.). Syn. n.

! *Tachytes aurifrons* Cameron, 1900a: 23, "♀" = ♂. Lectotype ♂: Ceylon: Trincomalli (British Mus., Type Hym. 21.252). Present designation. Nec *Tachytes aurifrons* Lucas, 1848 = *Tachysphex panzeri* (vander Linden). Syn. n.

The types of *T. aurifrons* Cameron and *T. ceylonicus* do not differ from the Palaearctic *T. panzeri*. All have the same external morphology, and the shape of the volsella is identical.

***Tachysphex panzeri pulverosus* (Radoszkowski)**

! *Tachytes pulverosus* Radoszkowski, 1886: 32, ♀, ♂. Syntypes: Uzbek SSR: Samarkand (Zool. Inst. Cracow).

! *Tachysphex ablatius* Nurse, 1909: 516, ♀. Lectotype ♀: India: Bombay State: Deesa (British Mus., Type Hym. 21.253), present designation. Syn. n.

I could not find any difference between the lectotype female of *T. ablatius*

and a female of *T. panzeri pulverosus* from Fezzan, Libya, with which I compared it.

***Tachysphex vulneratus foucauldi* de Beaumont, stat. n.**

! *Tachysphex vulneratus* Turner, 1917b: 325, ♀. Lectotype ♀: East Zambia: Niamadzi River near Nawalia, 2000 ft. (British Mus., Type Hym. 21.214). Present designation.

! *Tachysphex foucauldi* de Beaumont, 1952b: 190, ♂. Holotype ♂: Algeria: Hoggar: Tinhamour (Mus. Zool. Lausanne).

T. vulneratus and *T. foucauldi* are certainly conspecific, but they differ enough to be recognized as geographic races. In the nominate subspecies, the gaster is red apically, and the tibiae are pubescent throughout; in the female, the gena is moderately developed as seen from above, the mesoscutal interspaces are mat, the mesopleural interspaces are linear, tergum V is finely, densely punctate, the undersides of the fore and midfemora are covered with appressed hair; and in the male, the dorsal, apical process of the volsella is widely rounded.

In *T. vulneratus foucauldi* the gaster is black, and the outer face of the foretibia is glabrous; in the female, the gena is narrow as seen from above, the mesoscutal interspaces are shining, the mesopleura are rugose (punctures contiguous), tergum V is finely, sparsely punctate, and the undersides of all femora are glabrous; in the male, the dorsal, pre-apical process of the volsella is narrow, truncate.

***Tachysphex schmiedeknechti* Kohl**

! *Tachysphex Schmiedeknechti* Kohl, 1883: 170, ♀. Syntypes: Greece: Egina = Aiyina (Nathist. Mus. Vienna).

! *Tachysphex heliophilus* Nurse, 1909: 515, ♀, ♂. Lectotype ♀: India: Bombay State: Deesa (British Mus., Type Hym. 21.245). Present designation; syn. n.

T. schmiedeknechti may be easily recognized by the peculiar, reticulate sculpture of the mesoscutum and mesopleura, by the densely serrate inner hindtibial spur, and by the dark, trans-

verse band of the forewing. Usually the female gaster is black in this species, but in the lectotype female of *T. heliophilus* tergum I and II are brownish red with black spots.

Tachysphex subfuscatus Turner

! *Tachysphex subfuscatus* Turner, 1917b: 323, ♀. Holotype ♀. Malawi: Mlanje (British Mus., Type Hym. 21.240).

! *Tachysphex strigatus* Turner, 1917b: 324, ♀. Lectotype ♀: East Zambia: on road Ft. Jameson to Lundazi, 4000 ft. (British Mus., Type Hym. 21.238). **Present designation; syn. n.**

The gaster is entirely red in the lectotype female of *T. strigatus*, while segments III-VI are black in the holotype of *T. subfuscatus* (pygidial area brownish red). Otherwise, both individuals are identical.

As in *T. schmiedeknechti*, the propodeum is truncate and the mesoscutum and mesopleura are strongly reticulate, but unlike this species the clypeal rim is denticulate, and the hindtibial spurs are of the usual form in *subfuscatus*.

Tachysphex erythropus (Spinola)

Lyrops erythropus Spinola, 1838: 479, "♀"
= ♂. Holotype ♂ (de Beaumont, 1952a:47): Egypt (Inst. Mus. Zool. Univ. Turin).

! *Tachysphex inventus* Nurse, 1903b: 516, ♂. Lectotype ♂: India: Bombay State: Deesa (British Mus., Type Hym. 21.251). **Present designation; syn. n.**

The lectotype male of *T. inventus* displays all characters of *T. erythropus*, including the compressed forefemoral notch (without erect hair on proximal margin) and the nonagglutinate hair fringes on the gastral stera.

Tachysphex selectus Nurse

! *Tachysphex selectus* Nurse, 1909: 514, ♂. Holotype ♂: India: Bombay (British Mus., Type Hym. 21.248).

! *Tachysphex actaeon* de Beaumont, 1960: 16, ♀, ♂. Holotype ♂: Israel: Jerusalem (Mus. Zool. Lausanne). **Syn. n.**

The holotype of *T. selectus* agrees with *T. actaeon* in all characters (see Pulawski, 1971).

Tachysphex sericeus (Smith)

! *Larrada sericea* Smith, 1856: 285, ♀. Holotype ♀: Gambia (British Mus., Type Hym. 21.237).

Turner, 1917d: 197 (*Tachysphex*).

! *Lyrops fluctuata* Gerstaecker, in Peters, 1857: 510, ♀. Holotype ♀: Mozambique: Tette (Zool. Mus. Berlin). Kohl, 1883b: 226 (*Tachysphex*).

Turner (1917d) and Arnold (1923a) considered these species as synonyms, but Arnold (1945) subsequently regarded them as distinct. My examination of the types has revealed that only 1 species is represented. For the characteristics of *T. sericeus* see Pulawski (1971: 416, as *T. fluctuatus*).

Holotachysphex holognathus (Morice)

Tachysphex (?) *integer* Morice, 1897: 308, ♀, ♂. Syntypes: Egypt: near Cairo (Oxford Univ. Mus.). *Nec Tachysphex integer* Kohl, 1892 = *Parapiagetia genicularis* (F. Morawitz), 1890. *Tachysphex* (?) *holognathus* Morice, 1897: 434 (new name for *T. integer* Morice nec Kohl). Pulawski, 1972: 818 (*Holotachysphex*).

! *Tachysphex pollux* Nurse, 1903b: 516, ♂. Holotype ♂: India: Bombay State: Deesa (British Mus., Type Hym. 21.516). **Syn. n.**

The holotype of *Tachysphex pollux* does not differ from Egyptian individuals of *H. holognathus*. The species was characterized by de Beaumont (1947a) and Pulawski (1972).

Prosopigastra creon (Nurse)

! *Homogambrus creon* Nurse, 1903a: 2, ♂. Lectotype ♂: India: Bombay State: Deesa (British Mus., Type Hym. 21.1,148). **Present designation.**

! *Prosopigastra* (*Homogambrus*) *acanthophora* Gussakovskij, 1933: 159, ♂. Holotype ♂: Turkmen SSR: Komarovskiy village S of Ashkhabad (Zool. Inst. Leningrad). **Syn. n.** Pulawski, 1965: 574 (*P. cimicivora acanthophora*).

Prosopigastra cimicivora cyprica de Beaumont, 1954: 154, ♀, ♂. Holotype ♂: Cyprus: Zakaki (Mus. Zool. Lausanne). **Syn.:** Pulawski, 1965: 574.

The lectotype male of *P. creon* displays all basic features of both *P. acanthophora* and *P. cimicivora cyprica* and is certainly conspecific. Diagnostic characters of *P. creon* are: thoracic hair erect (hair length on anterior part of mesoscutum equaling 1.5–2 midocellus

diameters), propodeal enclosure regularly ridged, knees yellow. It should be noted that in the lectotype of *P. creon* both pairs of lateral, mesosternal processes are well developed, the forewing marginal cell is short (its foremargin equaling pterostigma), and the gaster is black, except tergum I is largely brownish red.

Prosopigastra creon cemicivora (Ferton), stat. n.

Homogambrus cemicivorus Ferton, 1912: 406, ♀, ♂. Syntypes: Algeria: La Calle (Mus. Natl. Hist. Nat. Paris).

As shown by de Beaumont (1954), the Algerian form (*P. cemicivora*) and the Cyprian form (*P. cemicivora cypriaca* = *P. creon*) are geographic forms of 1 species. Because *P. creon* is the oldest available name, *P. cemicivora* becomes a subspecies of it.

Prosopigastra creon carinata Arnold, stat. n.

Prosopigastra carinata Arnold, 1922: 129. Holotype ♂: Rhodesia: Lonely Mine or Victoria Falls (Rhodesia Mus. Bulawayo).

A male from Matetsi, Rhodesia, determined as *P. carinata* by G. Arnold, and agreeing with the original description, is conspecific with the type of *P. creon*. It displays the diagnostic characters listed above, and also the penis valve is the same as in *P. creon*. However, *P. carinata* differs from Palae-arctic and Oriental populations in having dichoptic eyes (there is small space between them which equals 0.7 of a midocellus diameter). I consider this form as a subspecies of *P. creon*.

Species with holoptic eyes have sometimes been placed in the subgenus *Homogambrus*, but the holoptic-dichoptic variation in *P. creon* indicates the inappropriateness of this subgeneric scheme.

Prosopigastra nuda (Nurse), comb. n.

Tachysphex nudus Nurse, 1903b: 515, ♀. Lectotype ♀: India: Bombay State: Deesa (British Mus., Type Hym.: 21.398). **Present designation.**

The lectotype female of *Tachysphex nudus* is actually a *Prosopigastra*. The

legs and gaster are light red; the wings display a slightly infusate transverse band; the clypeal lip is regularly arcuate, not folded; the frontal swelling is of the usual size; the mesoscutum is densely, distinctly punctate (some interspaces on the disk slightly larger than punctures); the vertex and mesoscutum have appressed hair; and the foremargin of the marginal cell is longer than the pterostigma.

Parapiagetia genicularis (F. Morawitz)

Tachysphex genicularis F. Morawitz, 1890: 592, ♀. Holotype ♀: Turkmen SSR: station Pereval between Djebel and Kazandjik (Zool. Inst. Leningrad). de Beaumont, 1955: 223 (*Parapiagetia*).

Tachysphex (?) *integer* Kohl, 1892: 216, ♂. Holotype ♂: Armenia: Arax valley (Nathist. Mus. Vienna). **Syn. n.** de Beaumont, 1947b: 677 (*Parapiagetia*).

The types of *P. genicularis* and *P. integra* are actually opposite sexes of 1 species, which is characterized by the long marginal cell (its apical truncation is much shorter than 4th abscissa of the radial sector); the erect hair on vertex and the appressed hair on mesoscutum and scutellum; the nonemarginate middle clypeal lobe in female, and arcuate middle clypeal lobe in the male. The species is related to *P. odontostoma* Kohl.

Parapiagetia substriatula (Turner), comb. n.

Tachysphex substriatulus Turner, 1917d: 197, ♀. Holotype ♀: Pakistan: Punjab: Lahore (British Mus., Type Hym. 21.255).

Similar to *P. genicularis*, but the vertex hair is appressed, the mesoscutum is densely punctate (interspaces about 1 diameter apart), and the lateral corners of clypeal rim are sharp, prominent.

Parapiagetia erythropoda (Cameron)

Tachytes erythropoda Cameron, 1889: 135, ♀. Holotype ♀: India: Uttar Pradesh: Mussooree (Oxford Univ. Mus., coll. Rothney). Cameron, 1890: pl. IX, fig. 5 (*Notogonia*); Turner, 1917d: 196 (*Parapiagetia*).

Tachytes denticulata Morice, 1897: 305, ♀. Holotype ♀: Egypt: Zeitun near Cairo (Oxford Univ. Mus.). **Syn. n.** Pulawski, 1961: 86 (*Parapiagetia*).

Parapiagetia saharica de Beaumont, 1956: 201, ♂. Holotype ♂: Libya: Fezzan: Brak (British Mus., Type Hym. 21.1755). Syn. n.

The holotype female of *Tachytes erythropoda* bears a label "*Notogonia erythropoda*" in Cameron's handwriting. This specimen is identical with *P. denticulata* (see Pulawski, 1961). Several Indian males, collected with females of *P. erythropoda*, are identical with *P. saharica*.

Larropsis (*Ancistromma*) *obliqua* (Smith), comb. n.

Larrada obliqua Smith, 1856: 281, "♀" = ♂. Holotype ♂: Cape of Good Hope (British Mus., Type Hym. 21.331). Turner, 1917c: 291 (*Tachytes*).

Bohart and Bohart (1966) consider *Larropsis* and *Ancistromma* as distinct genera, but I cannot share their opinion. The subalar fossa is carinate below in *Larropsis* s.s. and not carinate in *Ancistromma*, but in my opinion this feature alone does not merit the generic separation of the 2 taxa, especially because all other basic structures of both are the same. *L. obliqua* belongs to species in which the subalar fossa is not carinate and is rather similar to the Palaearctic *L. punctulata* Kohl. In *L. obliqua*, however, the vertex is slightly wider than long; the clypeal lip is narrower than the middle lobe of the clypeus; and the gaster is black, with segments I and II brownish.

Tachytes vestitus (Smith)

Tachytes tarsatus Smith, 1856: 297, ♀. Holotype ♀: India, ? or Pakistan (British Mus., Type Hym. 21.365). Nec Say, 1823.

Larrada vestita Smith, 1873: 293, "♀" = ♂. Holotype ♂: India, ? or Pakistan (British Mus., Type Hym. 21.366). Syn.: Bingham, 1897: 188.

Tachytes tarsalis Dalla Torre, 1897: 685 (new name for *T. tarsatus* Smith, nec Say). Nec *Tachytes tarsalis* (Spinola), 1838.

Bingham (1897) synonymized *Tachytes tarsatus* Smith and *Larrada vestita*, and my examination of their types confirms that the two forms are the opposite sexes of 1 species. *T. vestitus* is characterized as follows: scapes, vertex, meso-

scutum and tergum I with erect hair; female: vertex almost as wide as long, its hair slightly longer than midocellus diameter; mesopleura and forecorners of mesoscutum totally obscured by appressed tomentum; gastral terga I-V with silvery, apical fascia; sternum II and hindfemora without erect hair; apical lobe of hindfemora large; gastral segments I-III red, the remaining black; legs black, the inner face of foretibiae and all tarsi reddish; male: vertex wider than long, its hair equaling midocellus diameter; flagellum cylindrical; mesopleurae and forecorners of mesoscutum almost totally hidden by appressed tomentum; apical margin of sternum VIII rounded; basitarsi of midlegs as in *T. obsoletus* Rossi; gastral sterna I-II and basal half of III red, the remaining black; legs black, tarsi reddish.

Tachytes fucatus Arnold

Tachytes fucata Arnold, 1951: 149, ♀. Lectotype ♀: S. Mauritania: Aleg (British Mus., Type Hym. 21.341). Present designation.

Tachytes serapis Pulawski, 1962: 379, ♀, ♂. Holotype ♀: Egypt: Heluan (Mus. Zool. Lausanne). Syn. n.

The hindfemora are red in the lectotype female of *T. fucatus*, but otherwise this specimen agrees perfectly with the original diagnosis of *T. serapis* (according to which the female hindfemora are black or sometimes dark ferrugineous). As in *T. serapis*, the clypeal bevel is indistinct.

Tachytes brevipennis Cameron

Tachytes brevipennis Cameron, 1900: 22, ♀. Lectotype ♀: India: Bengal: Barrackpore (British Mus., Type Hym. 21.369), present designation. *Tachytes maculitarsis* Cameron, 1900: 24, ♂. Syntypes: India: Bengal: Barrackpore (Oxford Univ. Mus.). Syn. n.

The types of *T. brevipennis* and *T. maculitarsis* are the opposite sexes of 1 species. The vertex, mesoscutum and tergum I have long, erect hair, but the hair on the scapes is short and appressed. The vertex is wider than long. The gaster and legs are black. The apical lobe of the female hindfemora is small. The male

flagellum is cylindrical, and sternum VIII is emarginate apically. The basitarsi of midlegs as in *T. obsoletus*.

Tachytes diversicornis Turner

- ! *Tachytes diversicornis* Turner, 1918a: 94, ♂, ♀. Lectotype ♂: Pakistan: Karachi (British Mus., Type Hym. 21.370). **Present designation.**
! *Tachytes griseola* Arnold, 1951: 149, ♀, ♂. Lectotype ♂: Ghana: Labadi (British Mus., Type Hym. 21.340b). **Present designation; syn. n.**
! *Tachytes rufitibialis* Arnold, 1951: 150, ♂. Lectotype ♂: Mali: Tillembeya (British Mus., Type Hym. 21.342). **Present designation; syn. n.**

T. diversicornis was correctly interpreted by me (Pulawski, 1962), and *T. griseolus* and *T. rufitibialis* have proven to be synonyms of this species. Unlike Asiatic, Egyptian and Sudanese specimens, the hindtibiae are reddish basally in both sexes of *T. griseolus*, and entirely red in *T. rufitibialis*.

Tachytes pulchricornis Turner

- ! *Tachytes pulchricornis* Turner, 1917b: 38, ♂, ♀. Lectotype ♂: Malawi: Mlanje (British Mus., Type Hym. 21.323). **Present designation.**
! *Tachytes pulchricornis* subspecies *kolaensis* Turner, 1917b: 38, ♂, ♀. Lectotype ♂: Mozambique: Kola River near E. Mt. Chipirone (British Mus., Type Hym. 21.322). **Present designation; syn. n.**

In the lectotype male of *T. pulchricornis*, the basitarsi of the midlegs are strongly modified, almost as in *T. maculicornis* Saunders (see Pulawski, 1962: fig. 119). The flagellum is cylindrical, except that the ventral face of flagellomeres VIII and IX is slightly pointed apically; the hindfemora do not have erect hair. The vertex is as wide as long. In the lectotype male of *T. kolaensis*, the flagellum is slightly more marked with yellow, and the vertex is slightly longer than wide, but these differences are of an individual, not subspecific order.

Tachytes comberi Turner

- ! *Tachytes comberi* Turner, 1917d: 201, ♀, ♂. Lectotype ♀: Pakistan: Karachi (British Mus., Type Hym. 21.371). **Present designation.**
! *Tachytes Patrizii* Guiglia, 1932: 475, ♂. Holotype ♂: Libya: Kufra oasis (Mus. Civ. St. Nat. Genoa). **Syn. n.**

An easily recognized species (see Pulawski, 1962).

Tachytes fulvopilosus Cameron

- ! *Tachytes andreniformis* Cameron, 1902b: 64. Lectotype ♀: India: Assam: Khasia Hills (British Mus., Type Hym. 21.285a). **Present designation.** *Nec Tachytes andreniformis* Cameron, 1889.
! *Tachytes fulvo-pilosa* Cameron, 1904: 297, ♀. Holotype ♀: Northern India (Oxford Univ. Mus.). **Syn. n.**
! *Tachytes fulvo-vestita* Cameron, 1904: 298 (sex not mentioned). Holotype ♂: Northern India (Oxford Univ. Mus.). **Syn. n.**

In *T. fulvopilosus* the gaster is black, without golden or silvery fasciae. The mesoscutum has golden, appressed tomentum which totally obscures the sculpture in the female and almost totally so in the male. The femora are largely and the tibiae are totally red.

Tachytes tabrobanae Cameron

- ! *Tachytes tabrobanae* Cameron, 1900: 23, ♀. Holotype ♀: Ceylon (British Mus., Type Hym. 21.380). **Present designation.**
! *Tachytes proxima* Nurse, 1903b: 515, ♀, ♂. Lectotype ♀: India: Bombay State: Deesa (British Mus., Type Hym. 21.376). **Present designation; syn. n.**

T. proximus is a synonym of *T. tabrobanae*. The species (only females were examined) is characterized by the dense, appressed vestiture on the mesopleura and on the dorsal side of thorax and gaster, which totally obscures the integument at the forecorners of the mesoscutum. The legs are red except for black coxae.

Tachytes modestus Smith

- ! *Tachytes modestus* Smith, 1856: 299, ♀. Lectotype ♀: India: Punjab (British Mus., Type Hym. 21.384). **Present designation.**
! *Tachytes maculipennis* Cameron, 1904: 299, ♂. Holotype ♂: India: Assam: Khasia (Oxford Univ. Mus.). **Syn. n.**

The lectotype female of *T. modestus* agrees with the current interpretation of this species (Tsuneki, 1964b, 1967). Diagnostic characters are: galea as long as scape; clypeal lip emarginate mesally; femora (at least apically) and tibiae red;

gastral terga I-IV with silvery, apical fascia; female gastral sternum II densely punctate throughout (including apical depression).

***Tachytes modestus neglectus* Turner, stat. n.**

! *Tachytes neglecta* Turner, 1917b: 32, ♀. Lectotype ♀: Malawi: Mlanje (British Mus., Type Hym. 21.314). **Present designation.**

The type of *T. neglectus* is conspecific with *T. modestus* but this African form is sufficiently different to warrant subspecific status. It is characterized by the black femora and the dense, long hair of the underside of the hindfemora (longest hair equaling 2.5 midocellus diameters).

***Tachytes borneanus* Cameron**

! *Tachytes borneana* Cameron, 1902a: 96, ♀. Lectotype ♀: Borneo: Kuching (British Mus., Type Hym. 21.279a). **Present designation.**

! *Tachytes banoensis* Rohwer, 1919: 8, ♀. Holotype ♀: Philippines: Luzon Is.: Los Baños (U. S. Natl. Mus. Washington). **Syn. n.**

T. borneanus is morphologically identical to *T. modestus*, but it differs from the latter in having black femora and mid and hindtibiae.

***Tachytes astutus* Nurse**

! *Tachytes astutus* Nurse, 1909: 513, ♂. Lectotype ♂: India: Madhya Pradesh: Jubbulpore = Jabalpur (British Mus., Type Hym. 21.392). **Present designation.**

Tachytes shirozui Tsuneki, 1966: 11, ♀. Holotype ♀: Taiwan: Nantou-Hsien Pref.: Nanshanchi (Kyushu Univ. Fukuoka). **Syn. n.**

I have compared the syntypes of *T. astutus* with male specimens of *T. shirozui* received from Dr. K. Tsuneki and have found them identical in their external morphology and in the structure of their genital organs. The shape of the penis valve is characteristic for this species (Tsuneki, 1967), and male sternum VIII is not emarginate. Female sternum II is finely, densely punctate (including apical depression).

***Tachytes saundersii* Bingham**

! *Tachytes saundersii* Bingham, 1897: 189, ♂. Lectotype ♀: Burma: Tenasserim: Haundraw Valley (British Mus., Type Hym. 21.389). **Present designation.**

! *Tachytes shiva* Nurse, 1903a: 3, ♀. Lectotype ♀: India: Bombay State: Deesa (British Mus., Type Hym. 21.391). **Present designation; syn. n.**

! *Tachytes varipilosa* Cameron, 1905: 159, "♀" = ♂. Holotype ♂: Borneo: Kuching (British Mus., Type Hym. 21.340). **Syn. n.**

Tachytes formosanus Tsuneki, 1966: 12, ♂. Holotype ♂: Taiwan: Taipei-Hsien Pref.: Yangmingshan (Kyushu Univ. Fukuoka). **Syn. n.**

The female of *T. saundersii* may be easily recognized by the large punctures on sternum II (especially laterally before apical depression, where interspaces are slightly larger than punctures). The genitalia of a syntype of *T. saundersii* and of the holotype of *T. varipilosus* (which lacks the head) were examined. The penis valve of each is identical with figure 24 in Tsuneki (1966).

***Tachytes saundersii suluensis* Williams, stat. n.**

Tachytes suluensis Williams, 1928: 88, ♀. Holotype ♀: Philippines: Mindanao Is.: Dapitan (Bishop Mus. Honolulu).

I examined 1 ♀ and 1 ♂ paratype of *T. suluensis* from Surinao, Mindanao. They differ from *T. saundersii* in lacking silvery, apical fascia on the gastral terga. In the male, the preapical notch of the penis valve is about twice as wide as in *T. saundersii*. I consider *T. suluensis* as a geographic form of *T. saundersii*.

***Tachytes basilicus* (Guérin-Ménéville)**

Lyrops basilicus Guérin-Ménéville, 1844: 440, ♀. Holotype ♀: Senegal (Mus. Civ. St. Nat. Genoa).

! *Tachytes guichardi* Arnold, 1951: 146, ♂. Holotype ♂: Senegal: Dakar (British Mus., Type Hym. 21.1761). **Syn. n.**

I could not find any significant difference between *T. guichardi* and *T. basilicus*. For characteristics of *T. basilicus* see Pulawski (1962).

***Tachytes velox* Smith**

! *Tachytes velox* Smith, 1856: 301, ♂. Lectotype ♂: Gambia (British Mus., Type Hym. 21.295). **Present designation.**

! *Tachytes neavei* Turner, 1917b: 13, ♂. Holotype ♂: Zaire: Lualaba River, 2500–4000 ft. (British Mus., Type Hym. 21.297). **Syn. n.**

Contrary to Turner's (1917b, in key) statement, flagellomeres II-VII are

convex below in the type of *T. velox*; therefore, the supposed difference between this species and *T. neavei* do not exist. The types of both species are identical in all details examined.

T. velox is similar to *T. basilicus* but differs from the latter by the labrum which protrudes slightly beyond the clypeal foremargin, by the black gaster and by the different basitarsi of male mid-legs. The same characters distinguish *T. velox* and *T. monetarius* Smith (syn-types examined).

Tachytes argyreus (Smith), comb. n.

! *Larrada argyrea* Smith, 1856: 276, "♀" = ♂. Holotype ♂: Northern India, ? or Pakistan (British Mus., Type Hym. 21.250). Cameron, 1889: 143 (*Tachysphex*).

! *Tachytes melanopyga* Costa, 1893: 99, ♀. Holotype ♀: Tunisia (Ist. Zool. Univ. Naples). **Syn. n.**

! *Tachysphex debilis* Pérez, 1907: 498, ♀, ♂. Lectotype ♀ (Pulawski, 1971: 5); Persian Gulf (Mus. Natl. Hist. Nat. Paris). **Syn.**: Pulawski, 1971: 5.

The holotype male of *T. argyreus* agrees with *T. melanopyga* in all details of external morphology and in the structure of the genitalia (especially the penis valve). Its small size and fine sculpture indicate that *T. argyreus* is not a synonym of *T. bidens* Guss.

Tachytes pygmaeus Kohl

! *Tachytes pygmaea* Kohl, 1888: 134, ♀, ♂ (♂ = *T. argyreus* Smith). Lectotype ♀ (Pulawski, 1962: 465); Egypt (Nathist. Mus. Vienna)

! *Tachytes basalis* Cameron, 1889: 142, ♀. Holotype ♀: India: Uttar Pradesh: Mussoorie hills (Oxford Univ. Mus., coll. Rothney). Bingham, 1897: 188 (as synonym of *T. tarsatus* Smith).

! *Tachytes calvus* Turner, 1929: 556, ♀. Lectotype ♀: S.W. Africa: Okahandja (British Mus., Type Hym. 21.335). **Present designation; syn. n.**

! *Tachytes seminuda* Arnold, 1951: 153, ♀. Lectotype ♀: Mali: Tillembeya (British Mus., Type Hym. 21.336). **Present designation; syn. n.**

T. pygmaeus is easy to recognize because of its short, appressed vestiture, the glabrous propodeal enclosure, the shape of the clypeus, etc. The holotype of *T. basalis* does not differ from North African specimens described by Pulawski (1962). In the holotype of *T. calvus*,

the gaster is totally red, and the hair of the pygidial area is pale brownish. In the holotype of *T. seminudus*, the vestiture does not obscure the integument at the forecorners of the mesoscutum, and the inner face of the foretibiae is red. I think that these last 2 specimens are merely extreme forms of *T. pygmaeus*.

Gastrosericus rothneyi Cameron

! *Gastrosericus Rothneyi* Cameron, 1889: 147, ♀. Syntypes: India: Bengal: Barrackpore (Oxford Univ. Mus.).

! *Gastrosericus Binghami* Cameron, 1897: 22, ♂. Holotype ♂: India: Bengal: Barrackpore (Oxford Univ. Mus.). **Syn. n.**

Contrary to Cameron's (1897) opinion, the holotype of *G. binghami* (which lacks the head) is obviously the opposite sex of *G. rothneyi*. This species is characterized by the short, appressed vestiture of the head and thorax; the long marginal cell; the middle lobe of the clypeus produced into a narrow process; the finely, distinctly punctate propodeum; the black gaster; and the yellow outer face of tibiae.

Liris aurifrons (Smith), comb. n.

! *Larrada aurifrons* Smith, 1859: 16, ♂. Holotype ♂: Celebes (Oxford Univ. Mus.). Kohl, 1885: 242 (*Larra*).

! *Liris nitidus* Cameron, 1913: 113, ♀. Holotype ♀: India: Uttar Pradesh: Dehra Dun (British Mus., Type Hym. 21.124). **Syn. n.**

In my opinion, *L. aurifrons* and *L. nitida* are opposite sexes of 1 species. The mandibles are entire (subgenus *Liris* s.s.); the body is black; the wings are strongly infuscate (especially in female); the gaster has weak, silvery fascia on terga I-III; the gena adjacent to eyes has golden appressed tomentum which obscures the sculpture; the propodeal sides have evanescent ridges; and sternum II is convex basally.

Liris croesus (Smith)

! *Larrada croesus* Smith, 1856: 284, ♀. Holotype ♀: Gambia (British Mus., Type Hym. 21.165). Kohl, 1894: 300 (*Notogonia*); Arnold, 1923b: 235 (*Notogoniaidea*).

! *Notogonia pseudoliris* Turner, 1913: 750, ♀.

Lectotype ♀: Uganda: Entebbe (British Mus., Type Hym. 21.166). **Present designation; syn. n.** *Motes deceptor* Turner, 1916: 253, ♀. Holotype ♀: Nigeria: Offi (British Mus., Type Hym. 21.174). Syn.: Arnold, 1923b: 235. Turner, 1917a: 320 (*Notogonia*); Arnold, 1923b: 235 (*Notogoniaidea*).

According to the original description the claws of *Notogonia pseudoliris* are simple, but actually the lectotype female of this species has a tooth on each claw and is otherwise identical with the type of *L. croesus*. The shape of the labrum is diagnostic in this species: it is convex, slightly protruding beyond the clypeal foremargin and has a transverse fold which is distinctly emarginate mesally.

Liris docilis (Smith)

Larrada docilis Smith, 1873: 192, ♀. Lectotype ♀: Japan: Hyogo: Hokodadi (British Mus., Type Hym. 21.143). **Present designation.** *Larrada Tisiphone* Smith, 1873: 192, ♀. Holotype ♀: Japan: Nagasaki (British Mus., Type Hym. 21.142). *Nec Larrada tisiphone* Smith, 1857. Syn.: Tsuneki, 1964a: 221.

Tsuneki (1964a) correctly synonymized these species.

Liris jaculator (Smith)

Larrada jaculator Smith, 1856: 279, ♀. Holotype ♀: India: North Bengal (British Mus., Type Hym. 21.147). Cameron, 1889: 129 (*Notogonia jaculatrix*). *Notogonia Chapmani* Cameron, 1900: 25, ♀. Holotype ♀: India: Himalaya (British Mus., Type Hym. 21.148). Syn. n.

L. jaculator is very similar to *L. memnonia* Smith (type seen) in having silvery, apical fascia on gastral terga I-IV, in having a distinct, sinuate carina on the hindtibiae, and in other characters (see de Beaumont, 1961). In *L. jaculator*, however, the subcostal vein of the forewings is reddish brown rather than black as in *L. memnonia*. The holotype female of *L. chapmani* agrees with that of *L. jaculator* in all details examined.

Liris conspicua (Smith), comb. n.

Larrada conspicua Smith, 1856: 276, ♀. Holotype ♀: India (Oxford Univ. Mus.). Kohl, 1885: 242 (*Larra*); Bingham, 1897: 187 (*Tachytes*). *Notogonia pulchripennis* Cameron, 1889: 129, ♀. Holotype ♀: India: Orissa: Jeypore (Oxford

Univ. Mus.). Syn. n. Dalla Torre, 1897: 672 (*Larra*).

Notogonia luteipennis Cameron, 1890: pl. IX fig. 2.

I consider a female bearing a label "*Notogonia luteipennis* Cam. type" in Cameron's handwriting as the holotype of *L. pulchripennis*. The former name is doubtless a lapsus for *L. pulchripennis* described a year earlier. The valid name is *L. conspicua*, whose holotype is conspecific with that of *L. pulchripennis*. The species is very distinctive: mandibles emarginate, claws unarmed, middle lobe of clypeus not emarginate; spines of foretarsal rake spatulate; propodeal sides ridged; apicoventral margin of tarsomeres V convex, but much less than in other species; gastral segments I-III and legs red; and forewings yellow, with sharply limited external band.

Lyroda argenteofacialis (Cameron), comb. n.

Astata argenteofacialis Cameron, 1889: 151, "♀" = ♂. Syntypes: India: Bengal: Barrackpore (Oxford Univ. Mus.).

The 2 male syntypes, 1 of which bears a label "*Astata argenteofacialis* Cam." in Cameron's handwriting, actually belong in the genus *Lyroda*! The free margin of the middle lobe of the clypeus is broadly concave, but the concavity contains a mesal, arcuate lobe. The gaster is black, except that tergum I is brownish.

Bingham (1897) listed *Astata argenteofacialis* as a questionable synonym of *Lyroda formosa*. Unfortunately, I am unable to confirm this synonymy.

Lyroda formosa (Smith)

Morphota formosa Smith, 1859: 17, ♀. Holotype ♀: Celebes (British Mus.).

Odontolarra rufiventris Cameron, 1900: 36, ♀. Holotype ♀: India: Assam: Khasia (Oxford Univ. Mus.). Syn. n. Turner, 1914: 256 (*Lyroda*).

The holotype of *Odontolarra rufiventris* is identical with *Lyroda formosa*. Both have the same clypeal shape, and gastral segments I-III are red.

Astata boops (Schränk)

Sphex Boops Schrank, 1781: 384 [♂]. Type: Austria: Pratter = Vienna (lost).

Astata agilis Smith, 1875: 39, ♀. Holotype ♀: India: Nischidiupore (Oxford Univ. Mus.). Syn. n.

The holotype female of *A. agilis* agrees with the present interpretation of the common Palaearctic *A. boops*.

Astata australasiae Shuckard

Astata Australasiae Shuckard, 1838: 72, ♀. Holotype ♀: New Holland = Australia, but actually Chile or Argentina (British Mus., Type Hym. 21.68b).

Astata chilensis Saussure, 1854: 23, ♀. Lectotype ♀ (Parker, 1968: 848): Chile (Mus. Hist. Nat. Geneva). Syn. n.

A. australasiae is identical with *A. chilensis*, a South American species. The genus *Astata* is unknown in Australia and Shuckard's material was doubtless mislabeled. The type of *A. australasiae* compares favorably with the features of *A. chilensis* discussed by Parker (1968). I also examined the stigmal area of the propodeum, the basitarsi of the midlegs (foretarsi missing), and many other details.

Astata kashmirensis Nurse

Astata kashmirensis Nurse, 1909: 512, ♂. Holotype ♂: Kashmir, 5000–6000 ft. (British Mus., Type Hym. 21.67).

Astata (Astata) stecki de Beaumont, 1942: 407, ♀, ♂. Holotype ♀: Switzerland: Valais: Euseigne (Nathist. Mus. Basle). Syn. n.

The holotype of *A. kashmirensis* is a typical representative of the common European species known as *A. stecki*. It is characterized by long flagellomeres with peculiar tyloids, the black gastral sternum II, the short mesal brush on sterna IV–VI, the concave inner face of the midcoxae, and the yellowish brown foretibiae (darkened on posterior face).

Astata compta Nurse

Astata compta Nurse, 1909: 510, ♀. Holotype ♀: India: Mt. Abu, ? or Pakistan (British Mus., Type Hym. 21.58).

Astata absoluta Nurse, 1909: 511, ♂. Holotype ♂: India: Mt. Abu, ? or Pakistan (British Mus., Type Hym. 21.59). Syn. n.

The holotypes of *A. compta* and *A. absoluta* are obviously opposite sexes of

1 species. *A. compta* is characterized by the black gaster and by the well developed, very long vestiture. In the female, the head and thorax do not have stiff, dark or silvery setae, and the basitarsi of the fore and midlegs are similar to those of *A. minor* Kohl.

Astata quettae Nurse

Astata quettae Nurse, 1903a: 1, ♀, ♂ (♂ = *Astata resoluta* Nurse). Lectotype ♀ (Nurse, 1909: 510): Pakistan: Quetta (British Mus., Type Hym. 21.53).

Dimorpha (olim *Astata*) *fletcheri* Turner, 1917d: 193, ♀. Lectotype ♀: India: Bihar: Pusa (British Mus., Type Hym. 21.66). **Present designation;** syn. n.

Astatus (in sp.) *hirsutulus* Gussakovskij, 1927: 281, ♀. Holotype ♀: Mongolia: Lake Gashun area: Sachzhou oasis (Zool. Inst. Leningrad). Syn. n.

Astata (s.s.) *hungarica* Pulawski, 1958: 195, ♀. Holotype ♀: Hungary: Orszent Miklós (Zool. Mus. Budapest). Syn.: Pulawski, 1965: 572.

The lectotypes of *A. quettae* and *A. fletcheri* agree with the original description of *A. hungarica*. In the lectotype of *A. fletcheri*, the frontal bristles are concentrated on the lower part of the frons, but there is some variation in the paralectotypes. The mesopleura are sparsely punctate in the syntypes of *A. fletcheri*, and the interspaces are broader than the punctures.

Astata lubricata Nurse

Astata lubricata Nurse, 1903b: 514, ♀, ♂. Lectotype ♀: India: Bombay State: Deesa (British Mus., Type Hym. 21.64b). **Present designation.**

Astata eremita Pulawski, 1959: 359, ♂. Holotype ♂: S.E. Egypt: Gebel Elba (coll. Pulawski). Syn. n.

This species belongs to the *miegi* group in which the propodeal dorsum is haired. Indian males differ from Egyptian individuals only in the following characters: hindcoxae with pale hair only, underside of hindfemora with unicolorous, sparse hair, whose length equals about 0.5 a hindfemoral diameter.

Astata (Dryudella) orientalis Smith

Astata orientalis Smith, 1856: 310, ♂. Holotype ♂: India, ? or Pakistan (British Mus., Type Hym. 21.55).

Astata interstitialis Cameron, 1907: 1011, "♀"
= ♂. Lectotype ♂: India: Bombay State:
Deesa (British Mus., Type Hym. 21.54b).
Present designation. Syn.: Meade Waldo, 1915:
336. Nurse, 1909: 511 (type = ♂, not ♀).

A. orientalis belongs in the *tricolor* group. The species is characterized (in the male sex) by a large, yellow frontal spot, yellow tegulae and precostal plates, and by having the basal veins of the forewings yellow; by the middle lobe of the clypeus which narrows anterad to a small, sharp point which is bent upward apically; and by the absence of a lobe on lower edge of the mandible, and no teeth or indentations on the inner edge.

According to Turner (1917d), *A. maculifrons* Cameron is also a synonym of *A. orientalis*, but I cannot agree with his opinion. Although the clypeus is pointed in both forms, the 2 are different enough to consider them as distinct species.

References Cited

- Arnold, G. 1922. The Sphegidae of South Africa. Part I. Ann. Transvaal Mus. 9: 100–138.
———. 1923a. The Sphegidae of South Africa. Part II. Ann. Transvaal Mus. 9: 143–190, pl. V.
———. 1923b. The Sphegidae of South Africa. Part III. Ann. Transvaal Mus. 9: 191–253.
———. 1945. The Sphecidae of Madagascar, Cambridge, England, 193 pp.
———. 1951. Sphecidae and Pompilidae (Hymenoptera) collected by Mr. K. M. Guichard in West Africa and Ethiopia. Bull. Brit. Mus. (Nat. Hist.), Entomol. 2: 97–187.
Beaumont, J., de. 1940. Les *Tachysphex* de la faune égyptienne (Hymenoptera: Sphecidae). Bull. Soc. Fouad I^{er} Entomol. 24: 153–179.
———. 1942. Etude des *Astata* de la Suisse avec quelques notes sur les espèces de la faune française. Mitt. Schweiz. Entomol. Ges. 18: 401–415.
———. 1947a. Nouvelle étude des *Tachysphex* de la faune égyptienne (Hymenoptera: Sphecidae). Bull. Soc. Fouad I^{er} Entomol. 31: 141–216.
———. 1947b. Contribution à l'étude du genre *Tachysphex*. Mitt. Schweiz. Entomol. Ges. 20: 661–677.
———. 1955. Synonymie de quatre genres de Sphecidae décrits par Gussakovskij. Mitt. Schweiz. Entomol. Ges. 28: 222–223.
———. 1952a. Sphecidae paléarctiques décrits par M. Spinola (Hym.). Boll. Ist. Mus. Zool. Univ. Torino 3: 39–51.
———. 1952b. Voyages de M. A. Giordani Soika au Sahara. V^e note. Sphecidae (Hym.) du Hoggar. Boll. Soc. Venezia. St. Nat. Mus. Civ. St. Nat. 6: 187–199.
———. 1954. Notes sur le genre *Prosopigastra* (Hym. Sphecid.). Mitt. Schweiz. Entomol. Ges. 27: 153–156.
———. 1956. Sphecidae (Hym.) récoltés en Libye et au Tibesti par M. Kenneth M. Guichard. Bull. Brit. Mus. (Nat. Hist.), Entomol. 4: 167–215.
———. 1960. Sphecidae de l'île de Rhodes (Hym.). Mitt. Schweiz. Entomol. Ges. 33: 1–26.
———. 1961. Les *Liris* F. du bassin méditerranéen (Hym. Sphecid.). Mitt. Schweiz. Entomol. Ges. 34: 213–252.
Bingham, C. T. 1897. Hymenoptera.-Vol. I. Wasps and Bees, XXIX + 579 pp. in: Fauna of British India, including Ceylon and Burma. London, Taylor and Francis.
Butler, A. G. 1874. Insects (conclusion) in Richardson and Gray, The Zoology of the Voyage of H.M.S. Erebus and Terror, vol. 2, no. 19, pp. 25–51, plates 7–10 (by A. White). London, E. W. Janson.
Bohart, G. E., and R. M. Bohart. 1966. A revision of the genus *Larropsis* Patton (Hymenoptera: Sphecidae). Trans. Amer. Entomol. Soc. 92: 653–685.
Cameron, P. 1888. Descriptions of twenty-three new species of Hymenoptera. Mem. Proc. Manchester Lit. Phil. Soc. (4)1: 159–182.
———. 1889. Hymenoptera Orientalis; or contributions to a knowledge of the Hymenoptera of the Oriental Zoological Region. *Ibid.* (4)2: 91–152.
———. 1890. Hymenoptera Orientalis, or contributions to a knowledge of the Hymenoptera of the Oriental Zoological Region. *Ibid.* (4)3: 239–284 + pl. IX-X.
———. 1897. Hymenoptera Orientalia, or contributions to a knowledge of the Hymenoptera of the Oriental Zoological Region. Part VI. *Ibid.* 41, No. 13: 1–28 + pl. 16.
———. 1898. Notes on a collection of Hymenoptera from Greymouth, New Zealand, with descriptions of new species. *Ibid.* 42, No. 1: 1–53.
———. 1900. Descriptions of new genera and species of aculeate Hymenoptera from the Oriental Zoological Region. Ann. Mag. Nat. Hist. (7)5: 17–41.
———. 1902a. On the Hymenoptera collected by Mr. Robert Shelfort at Sarawak, and on the Hymenoptera of the Sarawak Museum, J. Straits Br. Roy. Asiatic Soc. 37: 29–131.
———. 1902b. Descriptions of new species of fossorial Hymenoptera from the Khasia Hills, Assam. Ann. Mag. Nat. Hist. (7)10: 54–69 + 77–89.
———. 1903. Descriptions of nineteen new species of Larridae, *Odynerus* and Apidae from Barrackpore. Trans. Entomol. Soc. London 1903: 117–132.
———. 1904. On some new species of Hymenoptera from Northern India. Ann. Mag. Nat. Hist. (7)13: 277–303.

- . 1905. A third contribution to the knowledge of the Hymenoptera of Sarawak. J. Straits Br. Roy. Asiatic Soc. 44: 93–168.
- . 1907. Description of a new genus and some new species of Hymenoptera captured by Lieut.-Col. C. G. Nurse at Deesa, Matheran and Ferozepore, J. Bombay Nat. Hist. Soc. 17: 1001–1012.
- . 1913. On some new and other species of non-parasitic Hymenoptera in the collections of the Zoological Branch of the Forest Research Institute, Dehra Dun. Indian Forest Rec. 4: 111–123.
- Costa, A. 1893. Miscellanea entomologica. Memoria quarta, Rendic. R. Accad. Sc. Fis. Mat. Napoli 7: 99–102.
- Dalla Torre, C. G. de. 1897. Catalogus Hymenopterorum hucusque descriptorum systematicus et synonymicus. Vol. 8. Fossores (Sphegidae). Lipsiae, 749 pp.
- Ferton, Ch. 1912. Hyménoptères nouveaux d'Algérie et observations sur l'instinct d'une espèce. Bull. Soc. Entomol. France 1912: 186–191.
- Guérin-Méneville, F. E. 1844. Insectes, vol. 3, 576 pp. in Cuvier, Iconographie du Règne animal, Paris.
- Guiglia, D. 1932. Spedizione scientifica all'oasi di Cufra (marzo-luglio 1931). Imenotteri Aculeati. Ann. Mus. Civ. St. Nat. G. Doria 55: 466–486.
- Gussakovskij, V. 1927. Les espèces paléarctiques du genre *Astatus* Latr. (Hymenoptera, Sphecidae), Ann. Mus. Zool. Acad. Sci. URSS 1927: 265–296.
- . 1933. Revisio generis *Prosopigastra* (s. lato) (Hymenoptera, Sphecidae), Rev. Ent. URSS 25: 154–173.
- Iwata, K. 1933. New species of *Pemphredon* (*Dineurus*) and *Tachysphex* from Japan (Hymenoptera). Trans. Kansai Entomol. Soc. 4: 45–60.
- Kirkaldy, G. W. 1910. Summaries of some papers relating to the New Zealand insect fauna, published outside the Dominion (1907–9), with some new names. Proc. New Zealand Inst. 4: 129–131.
- Kohl, F. F. 1883. Über neue Grabwespen des Mediterrangebietes. Deutsch. Entomol. Z. 27: 161–186.
- . 1884. Neue Hymenopteren in den Sammlungen des k.k. zool. Hof-Cabinetes zu Wien. Verh. Zool.-Bot. Ges. Wien 33: 331–386, pl. XVII–XVIII.
- . 1885. Die Gattungen und Arten der Larriden Autorum *Ibid.* 34: 171–267, pl. VIII–IX; 327–454, pl. XI–XII.
- . 1888. Neue Hymenopteren in den Sammlungen des k.k. naturhistorischen Museums. III. *Ibid.* 38: 133–156 + pl. III–IV.
- . 1892. Neue Hymenopterenformen. Ann. Naturhist. Hofmus. 7: 197–234, pl. XIII–XV.
- . 1894. Zur Hymenopterenfauna Afrikas. Ann. Naturhist. Hofmus. 9: 279–350.
- . 1901. Ueber neue Arten der Hymenopteren-Gattung *Tachysphex* Kohl. Verh. Zool.-Bot. Ges. Wien 51: 777–784, pl. VII.
- Linden, P. L. vander. 1829. Observations sur les Hyménoptères d'Europe de la famille de Fouisseurs, deuxième partie. Bembecides, Larrates, Nyssonien et Crabronites. Nouv. Mém. Acad. Roy. Sci. Bel. Let. Bruxelles 5: 1–125.
- Meade-Waldo, G., C. Morley, and R. E. Turner. 1915. Notes and synonymy of Hymenoptera in the Collection of the British Museum. Ann. Mag. Nat. Hist. (8)16: 331–341.
- Morawitz, F. 1890. Hymenoptera Fossoria transcaspica nova. Horae Soc. Entomol. Ross. 24: 570–645.
- Morice, F. D. 1897. New or little known Sphegidae from Egypt. Trans. Entomol. Soc. London 1897: 301–316, 434 (a Correction) + pl. VI.
- Nurse, C. G. 1903a. New species of Indian Hymenoptera. J. Bombay Nat. Hist. Soc. 15: 1–18.
- . 1903b. New Species of Indian aculeate Hymenoptera. Ann. Mag. Nat. Hist. (7)11: 511–526, 529–549.
- . 1909. New and little known Indian Hymenoptera. J. Bombay Nat. Hist. Soc. 19: 510–517.
- Panzer, G. W. F. 1805. Faunae Insectorum Germaniae initia oder Deutschlands Insecten. Achter Jahrgang. LXXXIV–XCVI. Heft, Nürnberg: pl. 1–22 + index systematicus p. 1–13.
- Parker, F. D. 1968. On the subfamily Astatinae. Part IV. The South American species in the genus *Astata* Latreille. Ann. Entomol. Soc. Amer. 61: 844–852.
- Pérez, J. 1907. Mission J. Bonnier et Ch. Pérez. (Golfe Persique, 1901). II.—Hyménoptères. Bull. Sci. France Belgique, 41: 485–505.
- Peters, C. H. 1857. Übersicht der von ihm in Mossambique aufgefundenen und von Hrn. Dr. Gerstäcker bearbeiteten Hymenopteren aus der Familien der Crabronites, Sphegidae, Pompilidae und Heterogyna. Monatscher. Akad. Wiss. Berlin 1857: 590–513.
- Pulawski, W. 1958. Deux espèces nouvelles du genre *Astata* Latr. (Hym., Sphecidae) de la Hongrie. Polskie Pismo Entomol. 27 (1957): 193–199.
- . 1959. Espèces nouvelles ou peu connues du genre *Astata* Latr. *Ibid.* 29: 359–416.
- . 1961. Remarques sur les *Parapiagetia* Kohl d'Egypte (Hym., Sphecidae). *Ibid.* 31: 85–92.
- . 1962. Les *Tachytes* Panz. de la région paléarctique occidentale et centrale (Hym., Sphecidae). *Ibid.* 32: 311–475.
- . 1964. Etudes sur les Sphecidae (Hym.) d'Egypte. *Ibid.* 34: 63–155.
- . 1965. Sur la synonymie de certains Sphecidae (Hym.) paléarctiques. *Ibid.* 35: 563–578.
- . 1971. Les *Tachysphex* Kohl (Hym.,

- Sphecidae) de la région paléarctique occidentale et centrale. Wrocław, 464 pp.
- . 1972. Notes synonymiques sur quatre Sphecidae (Hym.) paléarctiques. *Polskie Pismo Entomol.* 42: 817–820.
- . 1974. A revision of the Neotropical *Tachysphex* Kohl (Hym., Sphecidae). *Ibid.* 44: 3–80.
- Radoszkowski, O.** 1886. Faune Hyménoptérologique Transcaspienne. *Horae Soc. Entomol. Ross.* 20: 3–56 + pl. I–XI.
- Rohwer, S. A.** 1919. Philippine wasp studies. Part 1. Descriptions of Philippine wasps. *Bull. Exp. Sta. Hawaii. Sug. Plant. Assoc. Entomol. Ser. No. 14*: 5–18.
- Saussure, H. de.** 1854. Mélanges Hyménoptérologiques. *Mem. Soc. Phys. Hist. Nat. Genève* 14: 1–67.
- . 1867. Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorff-Urbair. Zoologischer Theil, Zweiter Band. Hymenoptera. Familien der Vespiden, Sphegiden, Pompiliden, Crabroniden und Heterogynen, Wien: 1–138 + pl. I–IV.
- Schrank, F. de P.** 1781. Enumeratio Insectorum Austriae indigenorum. Augustae Vindelicorum: [1–24] + 1–548 + [1–2] + pl. I–VI.
- Shuckard, W. E.** 1838. Descriptions of new exotic aculeate Hymenoptera. *Trans. Entomol. Soc. London*, 2: 68–82, pl. VIII.
- Smith, F.** 1856. Catalogue of hymenopterous insects in the collection of the British Museum. Part IV. Sphegidae, Larridae, and Crabronidae. London: [4], 207–497, pl. VI–XI.
- . 1859. Catalogue of hymenopterous insects collected at Celebes by Mr. A. R. Wallace. *J. Proc. Linn. Soc., Zool.* 3: 4–27.
- . 1873. Descriptions of aculeate Hymenoptera of Japan, collected by Mr. George Lewis at Nagasaki. *Trans. Entomol. Soc. London* 1873: 181–199.
- . 1875. Descriptions of new species of Indian aculeate Hymenoptera, collected by Mr. G. R. James Rothney, member of the Entomological Society. *Ibid.* 1875: 33–51, pl. I.
- Spinola, M.** 1838. Compte-rendu des Hyménoptères recueillis par M. Fischer pendant un voyage en Egypte, et communiqués par M. le Docteur Waltl à Maximilien Spinola. *Ann. Soc. Entomol. France* 7: 437–546.
- Tsuneki, K.** 1964a. Notes on the nomenclature of the Japanese species of Larrini (Hymenoptera, Sphecidae, Larrinae). *Kontyû* 32: 214–222.
- . 1964b. The genus *Tachytes* Panzer of Japan and Korea (Hymenoptera, Sphecidae). *Etizenia* No. 5: 1–11.
- . 1966. Contribution to the knowledge of the Larrinae fauna of Formosa and the Ryukyus (Hymenoptera, Sphecidae). *Ibid.* No. 17: 1–15.
- . 1967. Studies on the Formosan Sphecidae (I). The subfamily Larrinae (Hymenoptera). *Ibid.* No. 20: 1–60.
- . 1971. Studies on the Formosan Sphecidae (XI). A supplement to the subfamily Larrinae (Hymenoptera). *Ibid.* No. 55: 1–21.
- Turner, R. E.** 1908. Notes on the Australian fossorial wasps of the family Sphegidae, with descriptions of new species. *Proc. Zool. Soc. London* 1908: 457–535, pl. XXVI.
- . 1913. On new species of fossorial Hymenoptera from Africa, mostly Elidinae, *Trans. Entomol. Soc. London* 1912: 720–754.
- . 1914. Notes on fossorial Hymenoptera, XII. On some new Oriental species. *Ann. Mag. Nat. Hist.* (8)14: 245–257.
- . 1915. Notes on fossorial hymenoptera, XVI. On the Thynnidae, Scolidae, and Crabronidae of Tasmania. *Ibid.* (8)15: 537–559.
- . 1916. Notes on fossorial Hymenoptera, XX. On some Larrinae in the British Museum. *Ibid.* (8)17: 248–259.
- . 1917a. Notes on fossorial Hymenoptera, XXVII. On new species in the British Museum. *Ibid.* (8)19: 317–326.
- . 1917b. A revision of the wasps of the genus *Tachytes* inhabiting the Ethiopian Region. *Ibid.* (8)20: 1–43.
- . 1917c. Notes on fossorial Hymenoptera, XXIX. On new Ethiopian species. *Ibid.* (8)20: 289–298.
- . 1917d. On a collection of Sphecoidea sent by the Agricultural Research Institute, Pusa, Bihar. *Mem. Dep. Agric. India, Entomol. Ser.* (4)5: 173–205.
- . 1918a. Notes on fossorial Hymenoptera, XXXII. On new species in the British Museum. *Ann. Mag. Nat. Hist.* (9)1: 89–96.
- . 1918b. Notes on fossorial Hymenoptera, XXXV. On new Sphecoidea in the British Museum. *Ibid.* (9)1: 356–364.
- . 1929. Notes on fossorial Hymenoptera, XLIII. On new Ethiopian Sphegidae. *Ibid.* (10)4: 554–559.
- Williams, F. X.** 1928. Studies in tropical wasps—Their hosts and associates (with descriptions of new species). *Bull. Exp. Sta. Hawaii. Sug. Plant. Assoc., Entomol. Ser. No. 19*: 1–179.